

AK3 (E-5): sc-398571

BACKGROUND

Adenylate kinases 1-5 (designated AK1-5) are a set of enzymes that regulate the phosphorylation state of intracellular adenine nucleotides, which are the principle high-energy phosphoryl-carrying molecules in living cells. By catalyzing phosphoryl transfer between adenine nucleotides (AMP, ADP, ATP), AKs influence metabolic signals, which include gene expression, ion channel activity and protein kinase-mediated signaling. Inherited mutations leading to AK deficiencies in erythrocytes have been implicated in hemolytic anemia. Human AK3 is a 223 amino acid protein that is present in the mitochondria of liver and heart. It utilizes GTP as a substrate relative to isoforms AK1 and AK2, which use ATP.

REFERENCES

- Shahjahan, M., et al. 1991. Cloning and characterization of the gene encoding bovine mitochondrial adenylate kinase isozyme 3. *Gene* 107: 313-317.
- Xu, G., et al. 1992. Characterization of human adenylate kinase 3 (AK3) cDNA and mapping of the AK3 pseudogene to an intron of the NF1 gene. *Genomics* 13: 537-542.
- Barile, M., et al. 1994. Mechanisms of toxicity of 3'-azido-3'-deoxythymidine. Its interaction with adenylate kinase. *Biochem. Pharmacol.* 48: 1405-1412.

CHROMOSOMAL LOCATION

Genetic locus: AK3 (human) mapping to 9p24.1; Ak3 (mouse) mapping to 19 C1.

SOURCE

AK3 (E-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 209-227 at the C-terminus of AK3 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

AK3 (E-5) is available conjugated to agarose (sc-398571 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-398571 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-398571 PE), fluorescein (sc-398571 FITC), Alexa Fluor[®] 488 (sc-398571 AF488), Alexa Fluor[®] 546 (sc-398571 AF546), Alexa Fluor[®] 594 (sc-398571 AF594) or Alexa Fluor[®] 647 (sc-398571 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-398571 AF680) or Alexa Fluor[®] 790 (sc-398571 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-398571 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

AK3 (E-5) is recommended for detection of AK3 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for AK3 siRNA (h): sc-29656, AK3 siRNA (m): sc-29657, AK3 shRNA Plasmid (h): sc-29656-SH, AK3 shRNA Plasmid (m): sc-29657-SH, AK3 shRNA (h) Lentiviral Particles: sc-29656-V and AK3 shRNA (m) Lentiviral Particles: sc-29657-V.

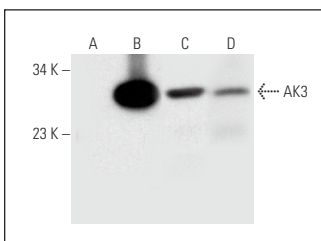
Molecular Weight of AK3: 25 kDa.

Positive Controls: AK3 (m): 293T Lysate: sc-118302, Hep G2 cell lysate: sc-2227 or A549 cell lysate: sc-2413.

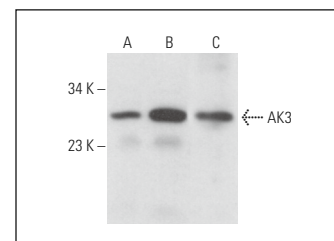
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

DATA



AK3 (E-5): sc-398571. Western blot analysis of AK3 expression in non-transfected 293T: sc-117752 (A), mouse AK3 transfected 293T: sc-118302 (B), Hep G2 (C) and A549 (D) whole cell lysates.



AK3 (E-5): sc-398571. Western blot analysis of AK3 expression in Hep G2 (A) and c4 (B) whole cell lysates and mouse postnatal kidney tissue extract (C).

SELECT PRODUCT CITATIONS

- Fecher, C., et al. 2019. Cell-type-specific profiling of brain mitochondria reveals functional and molecular diversity. *Nat. Neurosci.* 22: 1731-1742.
- Liu, X., et al. 2020. Adenylate kinase 4 modulates the resistance of breast cancer cells to tamoxifen through an m⁶A-based epitranscriptomic mechanism. *Mol. Ther.* 28: 2593-2604.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.